



Remington Waiver Petition: Analog transmissions in 2.4 GHz band

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“We are particularly excited about the use of unlicensed networking devices to serve rural America. We have now moved well beyond demonstration projects, and unlicensed networks are bringing broadband access to places that other services have left behind.”

Chairman Kevin Martin 6/4//2003 (joint statement with Commissioner Copps)

Public safety uses of 2.4 GHz

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Examples of Public Safety Organizations Deploying 802.11 Technology Today	
Los Angeles CA (pop. 3.8m) PD: 27 WLANs at police stations throughout the city	San Mateo CA (pop. 92,500) PD: metro scale, WiFi mesh network
Columbus OH (pop. 711,500) PD: Linked city PD to surrounding PDs	Buffalo Grove IL (pop. 42,900) PD: Patrol cars and mobile incident command
Baltimore MD (pop. 651,200) PD: Initial deployment of 160 patrol cars	North Miami Beach FL (pop. 40,800) PD: metro area network
New Orleans LA (pop. 484,700) Police surveillance	Upper Merriam Township NJ (pop. 30,000) PD: all patrol officers use the network, which covers 35% of the geography
Aurora CO (pop. 300,000) PD: mobile police and fire units	Post Falls ID (pop. 20,000) 23 access points with up to 5 mile radius; 22 patrol cars
Syracuse and Onondaga County NY (pop. 164,000) PD: 110 laptop equipped vehicles	Isle MN (pop. 700) 7-member police force equipped with 802.11b

Remington proposal

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Analog video/audio “uplink” at 2.4 GHz

From the device to portable control monitor

Analog – constant emissions when device is on

Device operates up to 2 hours

Requires waiver of Part 15/unlicensed device rules

Sections 15.247 (digital modulation) and 15.249 (digital power limit)

Technology purchased from overseas vendor

Device uses frequencies throughout the band

No migration strategy to digital or spread spectrum

Remington: Need for device and its potential use is tied to law enforcement

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- “The Eyeball R1 System reduces the danger to life while gathering information in small hazardous and confined areas, such as buildings, caves, tunnels and alleys, making it well-suited to counter-terrorism and law enforcement operations in urban, rural and wilderness areas.” Remington Petition
- “The Eyeball R1 will be used in situations of extreme stress where the full attention of the immediate area will likely be devoted to the law enforcement operation in progress.” Remington Petition
- “It is essential that the Commission treat this request with expedited consideration, considering the potential for lifesaving applications and the ability to effectively counter various terrorist activities, including hostage taking and minimizing destruction that might occur in other standoffs.” Remington Petition
- “The units will be used in situations in which it is hazardous for a public safety officer to directly observe a location. Such situations occur a few times a month in medium-sized jurisdictions. These are not devices that will be used 24/7 or on every street corner.”
7/18/2005 ex parte

How far away does WLAN have to be in order to avoid impact to its data rate?

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Data Rate	11 Mb/s	11 Mb/s	11 Mb/s	54 Mb/s	54 Mb/s	54 Mb/s
@ frequency offset “y”	0 MHz	10 MHz	15 MHz	0 MHz	10 MHz	15 MHz
Total incremental pathloss required	20	10	0	38	28	18
Free space, incremental separation distance	100	32	10	794	251	79
Indoor separation distance in meters	40	20	10	142	71	35
Outdoor separation distance in meters	155	68	30	683	300	132

Notes: 1 meter=1.09 yards (city block = 108 yards); power output ratio “Eyeball” to RLAN is 1W/100mW = 10dB; pathloss exponent (device 6’ off the ground) is $-A3.3$ =indoor and $-A2.8$ =outdoor; RLAN Signal Interference Ratio is 28dB for 54 Mb/s and 10dB for 11 Mb/s.

Waiver

A waiver can be granted “...in specific cases only if [the Commission] determines, after careful consideration of all pertinent factors, that such a grant would serve the public interest without undermining the policy which the rule in question is intended to serve.”

Petition for Waiver of the Part 15 UWB Regulations Filed by the Multi-band OFDM Alliance Special Interest Group, ET Docket No. 04-352, released March 11, 2005, *citing WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969); *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164 (D.C. Cir 1990).

- **Use of device will cause interference to nearby compliant devices**

Section 15.5(b) – devices must not cause interference; must accept interference received

- **2.4 GHz is widely used by public safety agencies today for 802.11 applications**
- **If FCC chooses to grant, it should avoid unrestricted use of the digital band by this – or any subsequent – analog device**

If a waiver is granted, what's the best balance for 2.4 GHz users and public safety?

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- **Enable purchase by federal, state, local law enforcement**
No mass market sales
- **Specific to FCC ID #**
- **Customer education/training**
Frequency coordination where possible
Canada/Mexico – border issue
Power only with built-in battery
Use by qualified purchasers only
- **Concern: Update technology in future**

Remington

- **Public safety pool 90.20, federal agencies, state-licensed investigative and private eye businesses**
90.20: hospitals, medical delivery services, forest conservation, ambulance services, etc., etc., etc.
State licensing = firearms licensing

